

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 955 119 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.11.1999 Bulletin 1999/45

(51) Int. Cl.⁶: **B23D 59/02**, B28D 1/04

(21) Application number: 99107406.3

(22) Date of filing: 26.04.1999

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventor: **Tondini, Claudio**
48010 Cotignola (IT)

(74) Representative:
Modiano, Guido, Dr.-Ing. et al
Modiano & Associati SpA
Via Meravigli, 16
20123 Milano (IT)

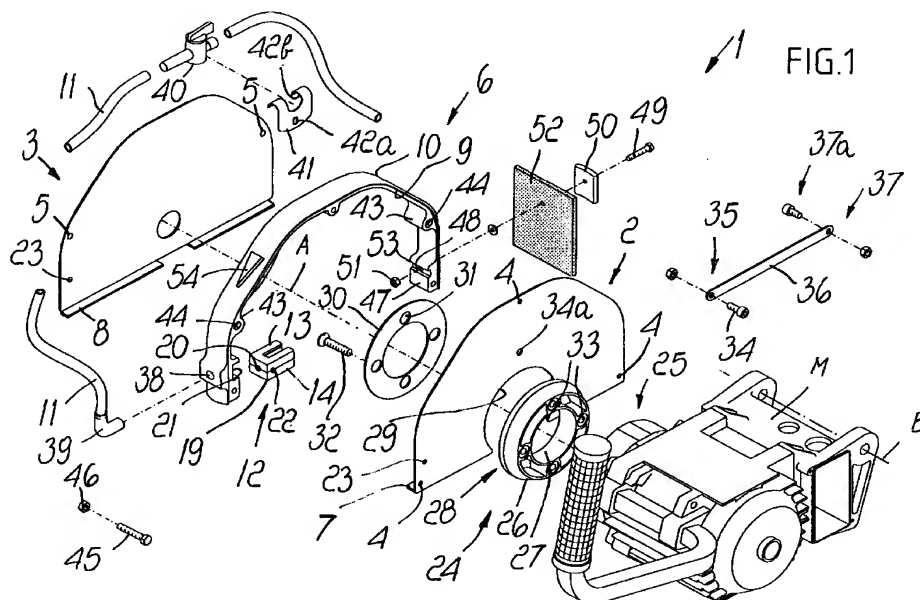
(30) Priority: 07.05.1998 IT BO980291

(71) Applicant:
SKC di Tondini Claudio
I-48010 Cotignola, Ravenna (IT)

(54) Disk housing for electric cutter with water-cooled cutting disk

(57) A disk housing for an electric cutter with water-cooled disk blade, comprising a pair of symmetrical semicircular plates (2,3) which are peripherally provided with holes (5) for screws for fixing onto the two faces of

a perimetric support (6) which is provided with interlock coupling means (9,10) for a water supply duct (11) and for a nozzle (12) for spraying water onto the disk blade.



EP 0 955 119 A2

Description

[0001] The present invention relates to a disk housing for an electric cutter with water-cooled disk.

[0002] Cutting tables for tiles or the like above which a longitudinal horizontal guide is mounted are known as electric cutters; a carriage is mounted so that it can slide along the guide, and a motor assembly, which supports a cutting disk, is associated with said carriage so as to oscillate on a horizontal transverse axis.

[0003] Work with certain materials entails the use of disks whose cutting edge must be kept constantly clean and cool by means of a jet of water; accordingly, and also in order to reduce the danger of workplace accidents, the disk is protected by a housing which is usually rigidly fixed to the casing of the motor assembly.

[0004] Conventional disk housings for electric cutters with water-cooled disk blade entail some drawbacks due to the fact that since they are usually made of a plurality of metal parts mutually joined by means of screws and bolts, they entail a rather troublesome assembly and can be noisy in use; additionally, a wide gap usually remains between the edge of the disk housing and the disk, allowing water spray to pass; further, the outlets for the water are usually provided crudely and accordingly the cutting region and the disk blade are poorly wet and cannot operate in an optimum manner.

[0005] Another drawback is due to the fact that the disk housing is rigidly coupled to the frame of the motor and therefore when the motor is made to oscillate about a transverse axis which is parallel to the rotation axis in order to work in a different planned configuration, a rather wide angle of the blade is not protected by the disk housing.

[0006] The aim of the present invention is to obviate the above-mentioned drawbacks of conventional devices, by providing a disk housing for an electric cutter with a water-cooled disk cooling which is easy to assemble and not noisy in use, reduces outward water spray, and with which the disk blade is perfectly wet with water: the disk housing according to the invention is further capable of effectively protecting from the blade also when the motor assembly is rotated about a transverse axis.

[0007] Within the scope of this aim, an object of the present invention is to provide a structure which is simple, relatively easy to provide in practice, safe in use, effective in operation and relatively of low cost.

[0008] This aim, this object and others which will become apparent hereinafter are achieved by the present disk housing for an electric cutter with water-cooled disk, characterized in that it comprises a pair of symmetrical semicircular plates which are peripherally provided with holes for screws for fixing onto the two faces of a perimetric support which is provided with interlock coupling means for a water supply duct and for a nozzle for spraying water onto the disk.

[0009] Further characteristics and advantages of the

present invention will become apparent from the following detailed description of a preferred but not exclusive embodiment of a disk housing for an electric cutter with water-cooled disk according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of a disk housing for an electric cutter with water-cooled disk according to the invention;

Figure 2 is an enlarged-scale exploded perspective view of the water spray nozzle of the disk housing;

Figure 3 is a partially sectional front view of a disk housing according to the invention;

Figure 4 is a side view of a disk housing according to the invention, with one of the semicircular plates removed;

Figure 5 is a top view of the nozzle of Figure 2;

Figure 6 is a sectional side view of the nozzle, taken along the plane VI-VI of Figure 5;

Figure 7 is a sectional front view of the nozzle, taken along the plane VII-VII of Figure 5.

[0010] With particular reference to the above figures, the reference numeral 1 generally designates a disk housing for an electric cutter with water-cooled disk blade according to the invention.

[0011] The disk housing 1 comprises two symmetrical semicircular plates 2, 3 which are peripherally provided with holes in mutually different positions; the first semicircular plate has three holes 4, while the second semicircular plate has two holes 5; said holes are meant for screws for fixing to the two faces of a perimetric support 6, and the semicircular plates are arranged parallel to each other and form, together with the support, a sort of flat box.

[0012] The semicircular plates 2, 3 are substantially shaped like half of a regular polygon and have, at the diagonal from which the cutting disk blade D protrudes, respective edges 7 and 8 which are folded inward: the perimetric support 6, which is advantageously formed by molding materials such as the plastics known by the trade-name Nylon, has, on its two faces, respective external ridges 9 and 10 for the interlock coupling of the polygonal edges of the semicircular plates 2, 3.

[0013] The perimetric support 6 is provided with interlock coupling means for a water supply duct 11 and for a nozzle 12 for spraying water onto the disk blade.

[0014] The nozzle 12 is substantially fork-shaped in order to wrap around the disk and has water passage openings which are directed toward the inside of its prongs. The nozzle 12 is produced by molding materials such as the plastics known by the trade-name Nylon and is constituted by two symmetrical half-shells 13 and 14 which are fork-shaped and can be coupled together by interlocking through the insertion of corresponding pins 15 in corresponding holes 16; passage ducts 17 and water spray openings 18 are formed in the mutually

contacting surfaces of the half-shells 13 and 14.

[0015] The means for coupling the nozzle to the support are of the type with a tenon 19 for the base of the nozzle, which is crossed by a central hole 20 for the passage of water, and with a mortise 21 formed in the support. In order to lock the nozzle there are provided two mutually opposite pins 22 which protrude from the nozzle, one half of said pins being formed in the half-shell 13 and the other half being formed in the half-shell 14, said pins fitting in corresponding holes 23 of the semicircular plates. It is noted that the nozzle wraps around the cutting edge of the disk blade and that water is sprayed from all sides by means of three spraying points directly toward said disk blade; it is also noted that the nozzle can be easily disassembled and can then be opened, since it is formed by two half-shells, in order to rapidly clean the water passage ducts and openings.

[0016] The semicircular plate 2 is provided with means 24 for hermetic rotary coupling to the head 25 of the motor M that drives the disk blade; the coupling means 24 comprise a flared spacer 26 which is centrally crossed by a hole 27 for the passage of the driving shaft. The spacer 26 has, on one face, an annular indent 28 which snugly and rotatably fits in an opening 29 of the semicircular plate 2. The reference numeral 30 designates an annular washer which is crossed by four holes 31 which are distributed in an annular pattern and in which corresponding screws 32 can be inserted. Such screws 32 pass through corresponding holes 33 of the spacer 26 and screw into respective threaded holes of the head 25 of the motor; the coupling means 24 allow the disk blade housing assembly to oscillate about the axis A of the shaft of the motor of the tile cutter.

[0017] An articulation pivot 34 for the end 35 of a metal arm 36 is screwed into a hole 34a of the semicircular plate 2; the other end 37 of the metal arm is meant to be articulated, by means of a pivot 37a, to the elements that support the disk blade driving motor, and such arm is meant to cause a coupling of the articulated-parallelogram type in order to turn the disk blade housing when the disk blade driving motor is made to oscillate in a known manner about an axis B in order to keep the disk blade covered in a safe configuration.

[0018] The support has, at the mortise for coupling the nozzle to the support and toward the outside, a through hole 38 for the hermetic coupling of a 90° coupling 39 for connection to the duct 11. The duct 11 is controlled by a cock 40, which is advantageously fitted to the disk housing 2 by means of a U-shaped element 41 which has a small hole 42a for fixing to one of the screws of the holes 4 and a wide opening 42b for the passage of the wings of the cock 40.

[0019] In the support 6, at the regions affected by the holes 4 and 5 of the semicircular plates, there are provided thicker regions 43 which are crossed by holes 44 for the screws 45 for fixing the semicircular plates; the

preferably hexagonal heads of the screws 45 are recessed in corresponding hexagonal seats formed at one of the two ends of the holes 44, while a lock nut 46, preferably of the self-locking type, is screwed at the free ends of the screws, after positioning the respective semicircular plate.

[0020] On the opposite side of the support with respect to the one where the nozzle is fixed, the thicker region continues with a portion 47 crossed by a hole 48 which is arranged radially with respect to the half-disk and is meant to accommodate a screw 49 for fixing, by means of a reinforcement plate 50 and a nut 51, a spray guard flap 52 made of a spongy material suitable to absorb sprays. Advantageously, the portion 47 has a notch 53 for the rotation-preventing coupling of the hexagonal head of the screw 49 or rather of the corresponding nut 51.

[0021] Conveniently, on the exposed surface of the support 6 there is an arrow 54 which is formed in relief and indelibly indicates the direction of rotation of the cutting disk blade.

[0022] It has thus been shown that the invention achieves the intended aim and objects.

[0023] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0024] All the details may further be replaced with other technically equivalent ones.

[0025] In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

[0026] The disclosures in Italian Patent Application No. BO98A000291 from which this application claims priority are incorporated herein by reference.

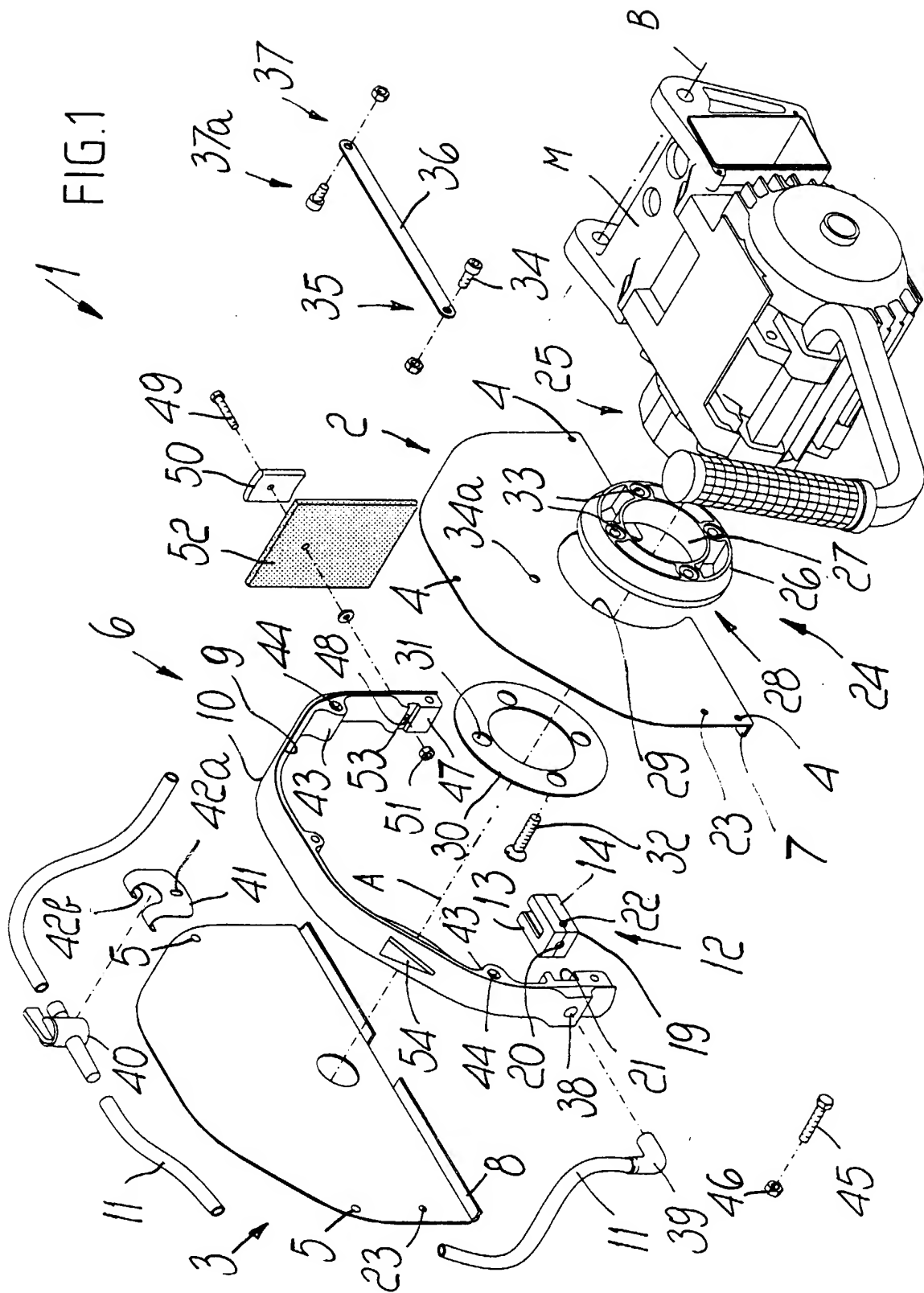
[0027] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A disk housing for an electric cutter with water-cooled disk blade, characterized in that it comprises a pair of symmetrical semicircular plates which are peripherally provided with holes for screws for fixing onto the two faces of a perimetric support which is provided with interlock coupling means for a water supply duct and for a nozzle for spraying water onto the disk blade.
2. The disk housing according to claim 1, characterized in that said semicircular plates are substantially shaped like half of a regular polygon and in that at the diagonal from which the disk blade pro-

trudes they have respective borders which fold inward.

3. The disk housing according to claim 1, characterized in that said perimetric support has, on its two faces, respective external ridges for the interlock coupling of the perimetric edges of said semicircular plates. 5
4. The disk housing according to claim 1, characterized in that said nozzle is substantially fork-shaped, in order to wrap around the disk blade, and has openings for the passage of water which are directed toward the inside of the prongs. 10
5. The disk housing according to claim 1, characterized in that said coupling means are of the type with a tenon for the base of the nozzle and with a mortise for the support, and in that mutual locking means are present which are constituted by pins which protrude from the nozzle and are suitable to enter corresponding holes of the semicircular plates. 15 20
6. The disk housing according to claim 1, characterized in that one of said semicircular plates has means for rotary hermetic coupling to the head of the motor that drives the disk blade. 25
7. The disk housing according to claim 6, characterized in that one of said semicircular plates has an articulation pivot for the end of an arm whose other end is articulated to the elements that support the motor that drives the disk blade, said arm being adapted to turn the disk housing when the disk blade driving motor is made to oscillate, in order to keep the disk blade in a protective configuration. 30 35
8. The disk housing according to claim 4, characterized in that said nozzle is constituted by two symmetrical fork-shaped half-shells which are mutually coupled by interlocking, passage ducts and water spray openings being formed in the contacting surfaces thereof. 40 45
9. The disk housing according to claim 1, characterized in that on the part of the support that lies opposite to the part where said nozzle is fixed there is a thicker portion which is crossed by a hole for a screw for fixing a spray guard flap made of spongy material. 50
10. The disk housing according to claim 1, characterized in that on the exposed surface of the support there is an arrow in relief which is suitable to indicate the direction of rotation of the cutting disk blade. 55



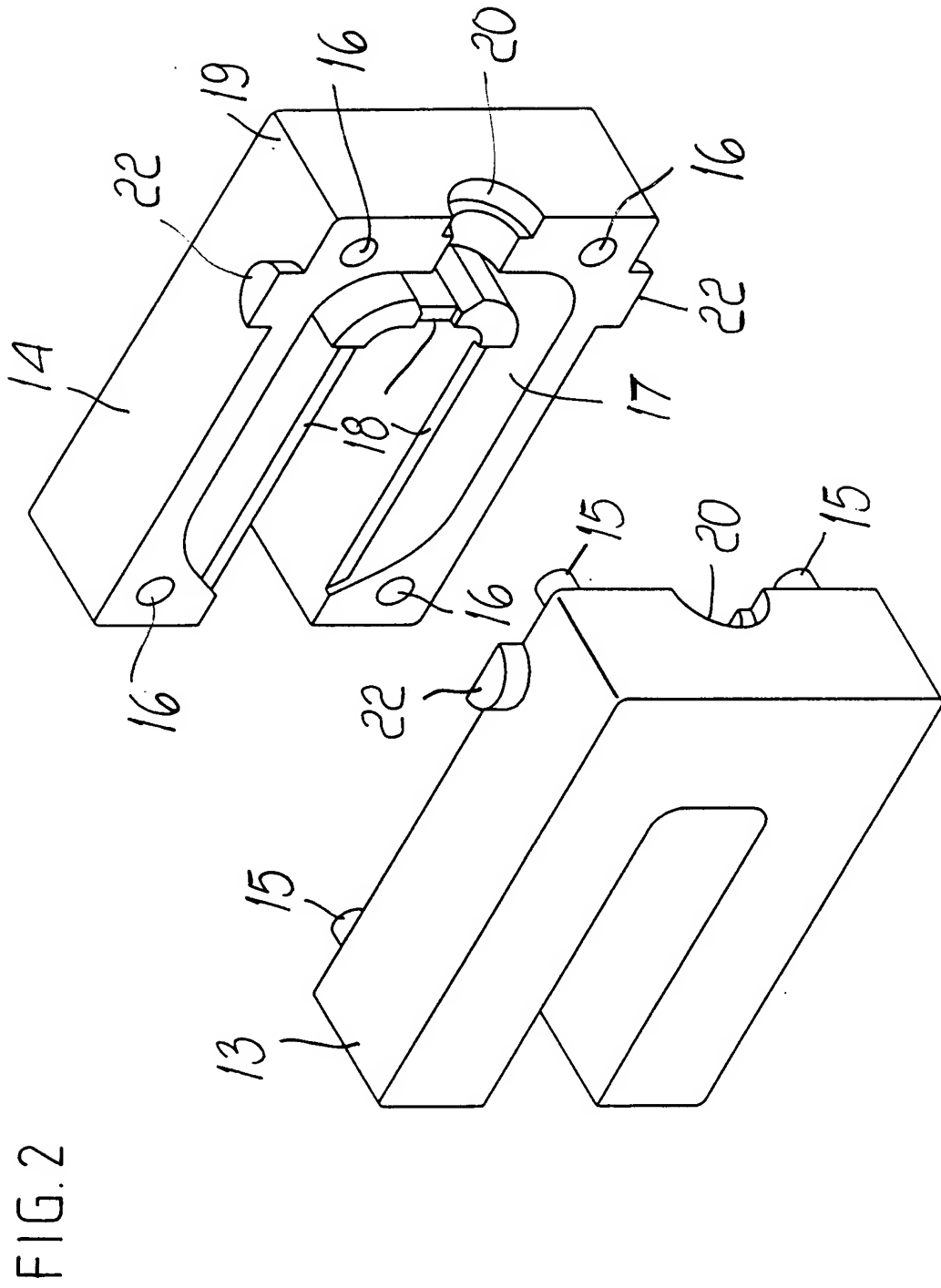
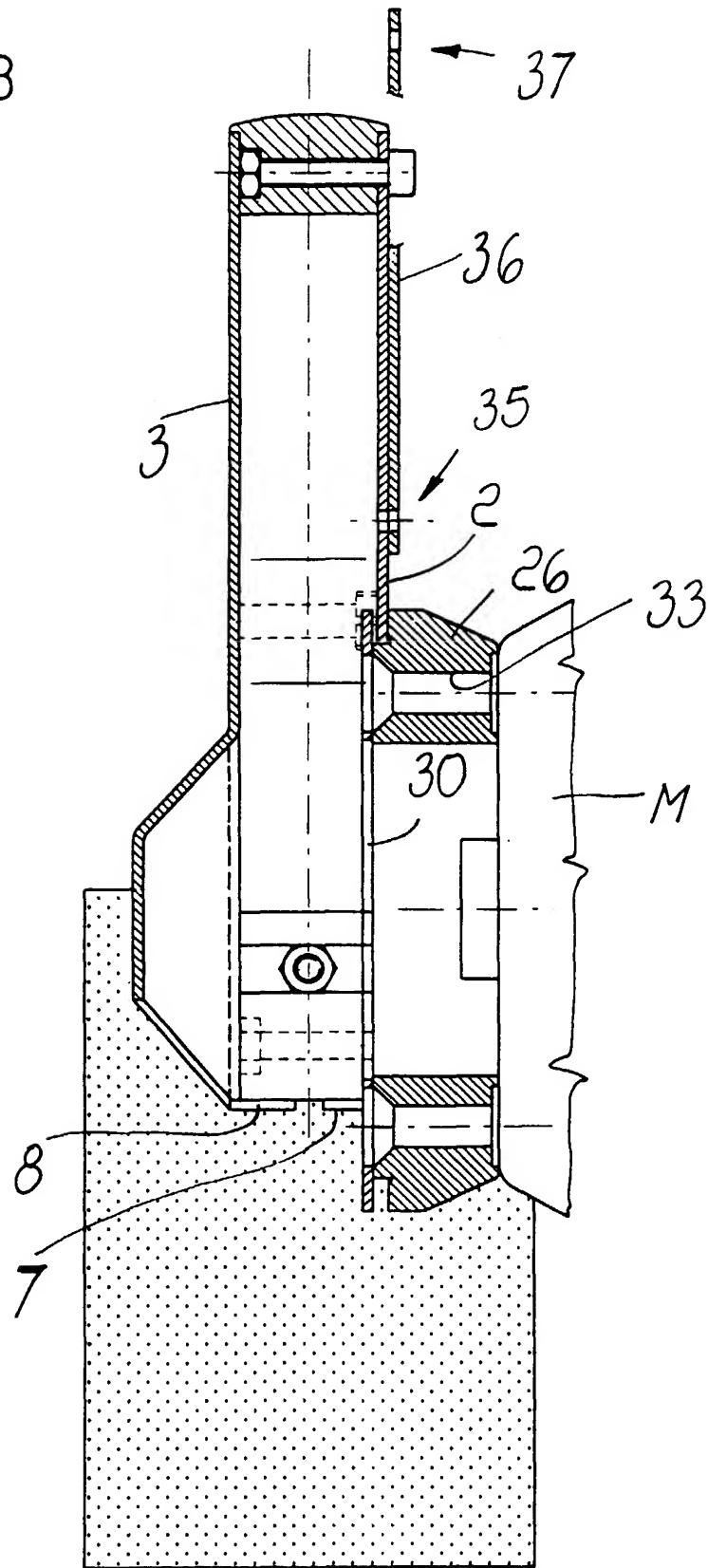


FIG.3



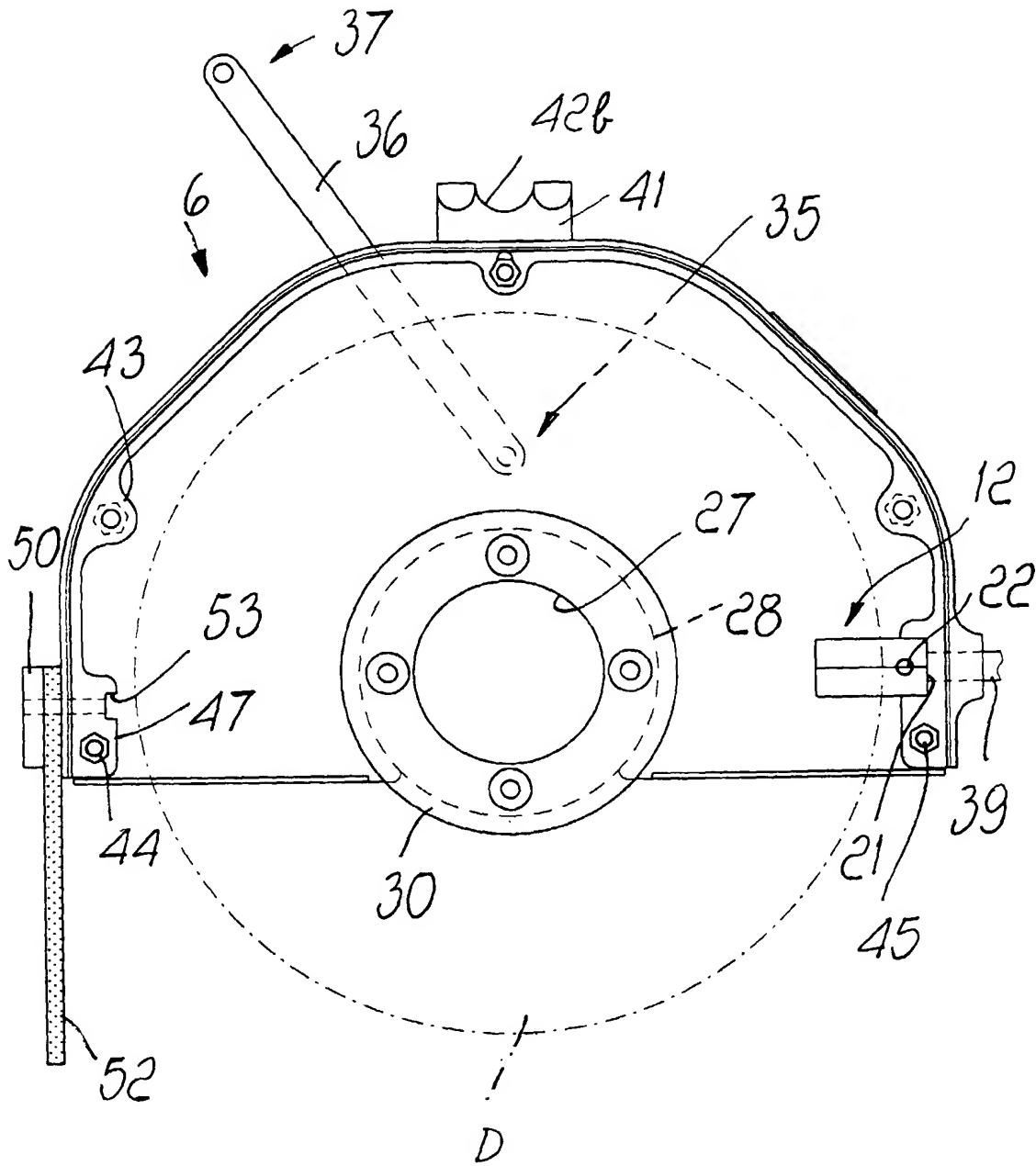


FIG. 4

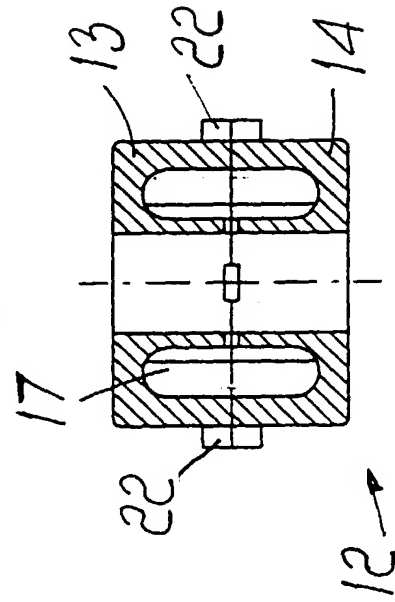
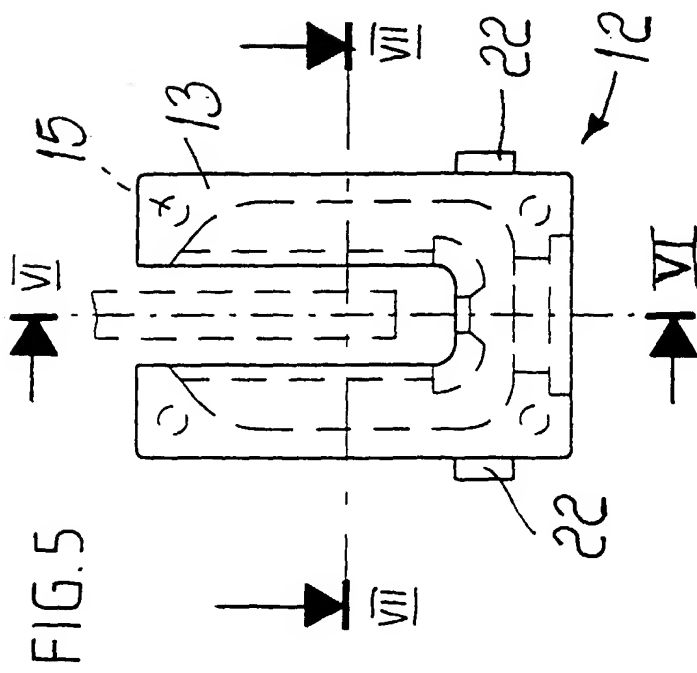


FIG.6

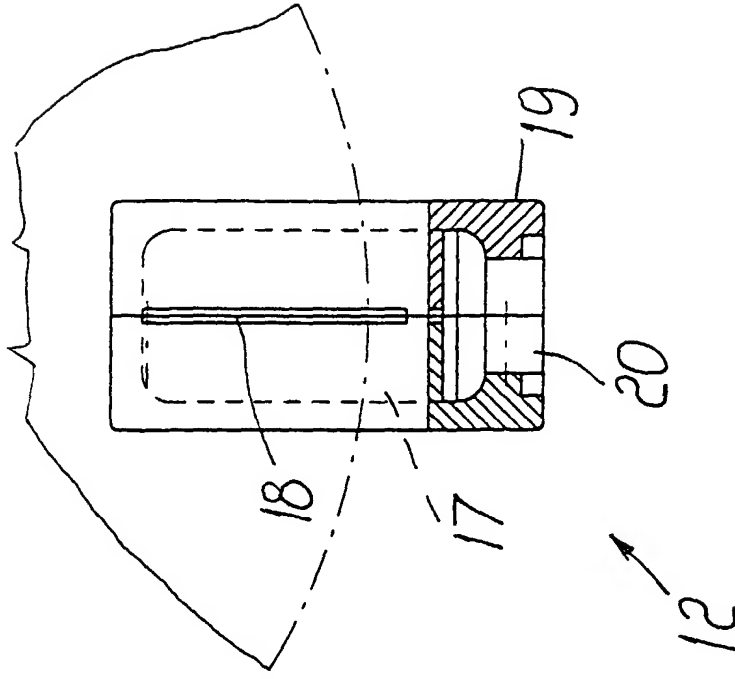


FIG.7